AMENDMENTS TO THE CLAIMS

1. (Canceled).

2. (Canceled).

3. (Canceled).

4. (Canceled).

5. (Currently Amended): A method of performing diversity antenna selection, comprising the steps of:

taking measurements from L different antenna branches n antenna branches at a time;

using the measurements to identify a group of n of the L different antenna branches that minimizes an approximate bit error probability of a signal that will eventually be constructed from sub-carriers that are each received by any one of the n antenna branches in the identified group of n antenna branches; and

selecting the identified group of n antenna branches;

wherein the measurements comprise power measurements of each of K sub-carriers;

wherein the step of using the measurements to identify a group of n of the L different antenna branches further comprises the step of:

computing an approximate bit error probability for each of the K sub-carriers for each of the L antenna branches n antenna branches at a time;

wherein the step of using the measurements to identify a group of n of the L different antenna branches further comprises the steps of:

forming different groupings of n antenna branches from among the L different antenna branches; and

for each different grouping of n antenna branches, selecting a minimum one of the approximate bit error probabilities for each one of the K sub-carriers;

~~A method in accordance with claim 4,~~ wherein the step of using the measurements to identify a group of n of the L different antenna branches further comprises the step of:

for each different grouping of n antenna branches, summing the minimum ones of the approximate bit error probabilities that were selected for each one of the K sub-carriers.

6. (Original): A method in accordance with claim 5, wherein the step of using the measurements to identify a group of n of the L different antenna branches further comprises the steps of:

determining which sum of the minimum ones of the approximate bit error probabilities has a smallest value; and

selecting the grouping of n antenna branches that produced the sum of the minimum ones of the approximate bit error probabilities having the smallest value.

7. (Currently Amended): A method in accordance with claim [[1]] 5, further comprising the step of:

calibrating a gain between n radio frequency (RF) receive paths.

8. (Original): A method in accordance with claim 7, wherein the step of calibrating a gain between n RF receive paths further comprises the steps of:

measuring a signal power received by a first one of the L antenna branches with a first receive path; and

measuring the signal power received by the first one of the L antenna branches with a second receive path.

9. (Currently Amended): A method in accordance with claim [[3]] 5, wherein the step of computing an approximate bit error probability for each of the K sub-carriers for each of the L antenna branches n antenna branches at a time further comprises the step of:

computing an approximate power magnitude for each of the K sub-carriers for each of the L antenna branches n antenna branches at a time based on the power measurements.

10. (Currently Amended): A method of performing diversity antenna selection, comprising the steps of:

taking measurements from L different antenna branches n antenna branches at a time;

using the measurements to identify a group of n of the L different antenna branches that minimizes an approximate bit error probability of a signal that will eventually be constructed from sub-carriers that are each received by any one of the n antenna branches in the identified group of n antenna branches; and

selecting the identified group of n antenna branches;

wherein the measurements comprise power measurements of

each of K sub-carriers;

wherein the step of using the measurements to identify a group of n of the L different antenna branches further comprises the step of:

computing an approximate bit error probability for each of the K sub-carriers for each of the L antenna branches n antenna branches at a time;

wherein the step of computing an approximate bit error probability for each of the K sub-carriers for each of the L antenna branches n antenna branches at a time further comprises the step of:

computing an approximate power magnitude for each of the K sub-carriers for each of the L antenna branches n antenna branches at a time based on the power measurements;

~~A method in accordance with claim 9,~~ wherein the step of computing an approximate bit error probability for each of the K sub-carriers for each of the L antenna branches n antenna branches at a time further comprises the step of:

approximating a Q-function for each of the K sub-carriers for each of the L antenna branches n antenna branches at a time with a corresponding approximate power magnitude comprising an argument thereof.

11. (Currently Amended): A method in accordance with claim [[3]] 5, wherein the step of using the measurements to identify a group of n of the L different antenna branches further comprises the step of:

storing the computed approximate bit error probabilities.

12. (Currently Amended): A method in accordance with claim [[4]] 5, wherein the step of forming different groupings of n antenna branches from among the L different antenna branches comprises the step of:

multiplexing approximate bit error probabilities corresponding to n antenna branches.

13. (Currently Amended): A method in accordance with claim [[2]] 5, wherein the K sub-carriers form an orthogonal frequency division multiplexing (OFDM) signal.

14. (Currently Amended): A method in accordance with claim [[1]] 5, wherein the step of taking measurements from L different antenna branches n antenna branches at a time comprises the steps of:

receiving a frame that includes a diversity selection portion comprising one or more antenna branch probing portions; and

taking measurements from n antenna branches during one of the antenna branch probing portions.

15. (Original): A method in accordance with claim 14, wherein the step taking measurements from n antenna branches during one of the antenna branch probing portions comprises the step of:

taking measurements from each one of the n antenna branches with a separate one of n radio frequency receivers.

16. (Currently Amended): A method in accordance with claim [[1]] 5, further comprising the step of:

constructing an output signal from sub-carriers that are each received by any one of the n antenna branches in the selected identified group of n antenna branches.

17. (Original): A method in accordance with claim 16, wherein the step of constructing an output signal from sub-carriers comprises the steps of:

computing an approximate power magnitude for each of K sub-carriers for each of the n antenna branches in the selected identified group of n antenna branches; and

comparing the approximate power magnitudes for each of the K sub-carriers for each of the n antenna branches in the selected identified group of n antenna branches with the approximate power magnitudes for each of the respective K sub-carriers for each of the other n antenna branches in the selected identified group of n antenna branches.

18. (Original): A method in accordance with claim 17, wherein the step of constructing an output signal from sub-carriers further comprises the step of:

based on results of the comparing step, selecting sub-carriers from one or more of the n antenna branches in the selected identified group of n antenna branches to form the output signal.

19. (Original): A method in accordance with claim 18, wherein the step of constructing an output signal from sub-carriers further comprises the step of:

storing results of the comparing step.

20. (Canceled).

21. (Canceled).

22. (Currently Amended): An apparatus that includes a diversity antenna selection module, wherein the diversity antenna selection module comprises:

a first computation stage configured to compute an approximate bit error probability for each of K sub-carriers for each of L different antenna branches n antenna branches at a time; and

a second computation stage configured to process the approximate bit error probabilities to identify a group of n of the L different antenna branches that minimizes an approximate bit error probability of a signal that will eventually be constructed from sub-carriers that are each received by any one of the n antenna branches in the identified group of n antenna branches;

wherein the second computation stage further comprises:

a multiplexer configured to form different groupings of n antenna branches from among the L different antenna branches; and

a minimum function stage configured to select a minimum one of the approximate bit error probabilities for each one of the K sub-carriers for each different grouping of n antenna branches;

~~An apparatus in accordance with claim 21,~~ wherein the second computation stage further comprises:

a summation stage configured to sum the minimum ones of the approximate bit error probabilities that were selected for

each one of the K sub-carriers for each different grouping of n antenna branches.

23. (Original): An apparatus in accordance with claim 22, wherein the second computation stage further comprises:

a minimum metric selection stage configured to determine which sum of the minimum ones of the approximate bit error probabilities has a smallest value; and

a diversity antenna decision stage configured to select the grouping of n antenna branches that produced the sum of the minimum ones of the approximate bit error probabilities having the smallest value.

24. (Currently Amended): An apparatus in accordance with claim [[20]] 22, wherein the second computation stage further comprises:

memories for storing the computed approximate bit error probabilities.

25. (Currently Amended): An apparatus in accordance with claim [[20]] 22, wherein the first computation stage further comprises:

n power measurement stages each configured to compute an approximate power magnitude for each of K sub-carriers.

26. (Currently Amended): An apparatus that includes a diversity antenna selection module, wherein the diversity antenna selection module comprises:

a first computation stage configured to compute an approximate bit error probability for each of K sub-carriers for

each of L different antenna branches n antenna branches at a time; and

a second computation stage configured to process the approximate bit error probabilities to identify a group of n of the L different antenna branches that minimizes an approximate bit error probability of a signal that will eventually be constructed from sub-carriers that are each received by any one of the n antenna branches in the identified group of n antenna branches;

wherein the first computation stage further comprises:

n power measurement stages each configured to compute an approximate power magnitude for each of K sub-carriers;

~~An apparatus in accordance with claim 25,~~ wherein the first computation stage further comprises:

n Q-function stages each configured to process approximate power magnitudes.

27. (Currently Amended): An apparatus in accordance with claim [[20]] 22, further comprising:

n radio frequency receivers coupled to the diversity antenna selection module.

28. (Currently Amended): An apparatus in accordance with claim [[20]] 22, further comprising:

an antenna selection stage configured to allow each of n different radio frequency receivers to be coupled to any one of the L different antenna branches.

29. (Currently Amended): An apparatus in accordance with claim [[20]] 22, further comprising:

a diversity antenna structure having L different antenna branches.

30. (Currently Amended): An apparatus in accordance with claim [[20]] 22, further comprising:

a sub-carrier selection diversity module configured to construct an output signal from sub-carriers that are each received by any one of the n antenna branches in the identified group of n antenna branches.

31. (Original): An apparatus in accordance with claim 30, wherein the sub-carrier selection diversity module comprises:

n power measurement stages each configured to compute an approximate power magnitude for each of K sub-carriers for one of the n antenna branches in the identified group of n antenna branches; and

a comparator configured to compare the approximate power magnitudes for each of the K sub-carriers for each of the n antenna branches in the identified group of n antenna branches with the approximate power magnitudes for each of the respective K sub-carriers for each of the other n antenna branches in the identified group of n antenna branches.

32. (Original): An apparatus in accordance with claim 31, wherein the sub-carrier selection diversity module further comprises:

a multiplexer configured to select sub-carriers from one or more of the n antenna branches in the identified group of n antenna branches based on data generated by the comparator to form the output signal.

33. (Original): An apparatus in accordance with claim 32, wherein the sub-carrier selection diversity module further comprises:

a memory configured to store the data generated by the comparator.

34. (Canceled).

35. (Canceled).

36. (Canceled).

37. (Canceled).

38. (Currently Amended): A diversity antenna selection module, comprising:

means for taking measurements from L different antenna branches n antenna branches at a time;

means for using the measurements to identify a group of n of the L different antenna branches that minimizes an approximate bit error probability of a signal that will eventually be constructed from sub-carriers that are each received by any one of the n antenna branches in the identified group of n antenna branches; and

means for selecting the identified group of n antenna branches;

wherein the measurements comprise power measurements of each of K sub-carriers;

wherein the means for using the measurements to

identify a group of n of the L different antenna branches further comprises:

means for computing an approximate bit error probability for each of the K sub-carriers for each of the L antenna branches n antenna branches at a time;

wherein the means for using the measurements to identify a group of n of the L different antenna branches further comprises:

means for forming different groupings of n antenna branches from among the L different antenna branches; and

means for selecting a minimum one of the approximate bit error probabilities for each one of the K sub-carriers for each different grouping of n antenna branches;

~~A diversity antenna selection module in accordance with claim 37,~~ wherein the means for using the measurements to identify a group of n of the L different antenna branches further comprises:

means for summing the minimum ones of the approximate bit error probabilities that were selected for each one of the K sub-carriers for each different grouping of n antenna branches.

39. (Original): A diversity antenna selection module in accordance with claim 38, wherein the means for using the measurements to identify a group of n of the L different antenna branches further comprises:

means for determining which sum of the minimum ones of the approximate bit error probabilities has a smallest value; and

means for selecting the grouping of n antenna branches that produced the sum of the minimum ones of the approximate bit error probabilities having the smallest value.

40. (Currently Amended): A diversity antenna selection module in accordance with claim [[34]] 38, further comprising:

means for calibrating a gain between n radio frequency (RF) receive paths.

41. (Original): A diversity antenna selection module in accordance with claim 40, wherein the means for calibrating a gain between n RF receive paths comprises:

means for measuring a signal power received by a first one of the L antenna branches with a first receive path; and

means for measuring the signal power received by the first one of the L antenna branches with a second receive path.

42. (Currently Amended): A diversity antenna selection module in accordance with claim [[34]] 38, wherein the means for taking measurements from L different antenna branches n antenna branches at a time comprises:

means for receiving a frame that includes a diversity selection portion comprising one or more antenna branch probing portions; and

means for taking measurements from n antenna branches during one of the antenna branch probing portions.

43. (Original): A diversity antenna selection module in accordance with claim 42, wherein the means for taking measurements from n antenna branches during one of the antenna branch probing portions comprises:

n radio frequency receivers with each one being configured to take measurements from one of the n antenna branches during one of the antenna branch probing portions.